Lesson 73 - Sugar And Carbohydrate Metabolism Disease

- Part I - Diabetes Mellitus
  - 1. Introduction
  - 2. History
  - 3. Classification
  - 4. Derangement Of Function
  - 5. Symptoms
  - 6. Medical Diagnosis
  - 7. Medical Treatment Of Diabetes Mellitus
  - 8. Effects Of Insulin
  - 9. Oral Hypoglycemic Agents
  - 10. The Diabetic Diet
  - 11. Why You Have Diabetes
  - 12. How You Can Improve Your Overall Health
- Part II - Diabetes Insipidus
  - 1. Introduction
  - 2. Symptoms
  - 3. Medical Treatment
- Part III - Hypoglycemia
  - 1. Introduction
  - 2. Other Factors
  - 3. General Symptoms
  - 4. Medical Diagnosis
  - 5. Medical Treatment
  - 6. Concentrated Sugar
  - 7. Conversion Mechanism
  - 8. Hormones That Maintain Balance
  - 9. Progression Of Hypoglycemia
  - 10. The Liver
  - 11. Hyperinsulinism
  - 12. What To Do If You Have Symptoms Of Hypoglycemia
- Questions & Answers
- Article #1: Diabetes Mellitus By Dr. Herbert M. Shelton
- Article #2: Diabetes

1. Introduction

The word diabetes is from the Greek word meaning to siphon and refers to the marked loss of water by urination, polyuria. The word mellitus is derived from the Latin word for sweet and thus diabetes mellitus—sweet urine disease.

Diabetes mellitus ranks among the leading factors of death in the United States. It is estimated that approximately 10 million Americans have diabetes. It is regarded as a metabolic disease of unknown

cause resulting from a deficiency of the pancreatic hormone insulin and an irregularity in the release of glucagon, a polypeptide hormone, and other hormones.

When you become enervated due to unhealthful living habits, a state of toxicosis develops. This situation will result in a lowered function of all cells and organs of the body. Certain tissues or organs may be more noticeably affected than others if they are inherently weaker, but the fact still remains that the entire system is affected.

Diabetes is a symptom of toxicosis. Often, the sufferer of this "disease" has been consuming large amounts of refined sweets such as cakes, pies, ice cream, candies, pastries, refined wheat products, etc. Under these conditions, the pancreas is continually stressed to secrete its hormone in order to eliminate the excess glucose from the blood. This results in enervation of the gland and exhaustion leads to decreased insulin output. The fact still remains that all organs are involved and this is seen in the many other symptoms manifested by the diabetic such as arteriosclerosis, blindness, etc. One problem with refined sugar is that it goes immediately into the blood without digestion. This flood of sugar is very enervating to the pancreas.

2. History

Diabetes mellitus was first described in an ancient Egyptian papyrus dating from the second millennium B.C. An Egyptian priest had observed that the urine of people afflicted by a disease of weight loss and excessive urination attracted insects, particularly bees and ants. Over the centuries, various other authors described a similar phenomenon without completely characterizing the disease or naming it.

It was the Greeks who characterized the excessive urination and the siphoning effect, or "the melting of the body through the loins" (weight loss and polyuria). A few centuries later, the Romans added the name mellitus, presumably because some enterprising physician gave the urine the taste test, discovering for sure its sugar content.

There were few developments that advanced our understanding of diabetes over the next millennium and a half. In more modern times, various diets were tried, some of them quite horrible. The rancid fat diet, popular in France in the 18th and 19th centuries, is one such example.

Scientific progress in our knowledge of diabetes began in the 18th century with the development of the microscope and Langerhan's description of the beta cell containing islets in the pancreas. Subsequent pathologists such as Virchow (1821-1902) and others then described the lesions of the pancreas, leading Minkowsky (1858-1931) to hypothesize that the pancreas was somehow involved in diabetes. Minkowsky then performed pancreatectomy in animals and produced diabetes. This experiment led to the speculation that the pancreas continued an internal secretion whose deficiency was responsible for the disease. Many experienced investigators searched in vain for the internal secretion of the pancreas. All efforts were thwarted because the enzymes of the exocrine pancreas digested the beta cells.

In the summer of 1921, Dr. Fredrick Banting devised a way of ridding the body of the exocrine pancreas while preserving functioning beta cells. Charles Best, a young graduate student working with Dr. Banting that summer, developed the alcohol techniques for extracting the hormone from the remaining pancreatic tissue and for measuring blood glucose. In August 1921, after several failures, an extract of pancreas produced a dramatic drop in blood glucose in a diabetic dog, thus the internal secretion of the pancreas had been isolated.

3. Classification

The National Diabetes Data Group from the National Institutes of Health distinguishes five subclasses of diabetes mellitus:

1. *Insulin-dependent diabetes mellitus or Type 1*
   Persons with this type of diabetes are supposed to be more prone to ketosis. This type is associated with an incompatibility of certain antigens with islet cell antibodies
   This is the usual medical approach and is based on an erroneous "immunity" theory. Diabetes (like all other "diseases") is developed over a certain period of time due to unhealthful habits resulting in enervation and toxicosis. We cannot create "immunity" from the effects of eating wrong foods or procuring insufficient sleep. Ketosis is a symptom of general bodily enervation and toxicosis.
2. *Noninsulin-dependent diabetes mellitus or Type II*
   This is a type of diabetes that is said not to be associated with ketosis or any other disease. However, people are not suddenly stricken down by diabetes. It is not an affliction that involves only the pancreas and no other tissues, glands or organs. An individual who is ill and shows symptoms of diabetes has a systemic toxicosis but the major sign of this toxicosis has demonstrated itself outwardly in the malfunction of the pancreas. In these cases, the pancreas is still secreting insulin but not in normal amounts. Physicians, therefore, do not necessarily prescribe insulin but usually control the diabetes through specially devised diets or with oral drugs. In so doing, they are still not removing the cause for the diabetes. (More about diet later.)

3. *Diabetes associated with certain conditions and symptoms such as pancreatic disease, changes in other hormones besides insulin, the administration of various drugs and chemical agents, insulin receptor abnormalities, genetic syndromes, and malnourished populations.*
   In this type of diabetes, other symptoms of toxicosis are recognized. It becomes especially clear that many bodily functions are also deranged when severe symptoms of diabetes are diagnosed. The body is a unit and works as a unit. If one organ is deranged, all are more or less functionally below par. The body will heal once the cause for toxic accumulation has been removed. In other words, if the cause of enervation and toxicosis is removed and the body is given a rest, healing will commence.

4. *Gastrointestinal diabetes, where glucose intolerance develops or is discovered during pregnancy and disappears afterwards.*
   This is not a common type of diabetes. During pregnancy, the body makes a number of adaptations. More research should be done in this area but it may be incorrect to diagnose diabetes in this incidence.

5. *Impaired glucose tolerance is present when individuals have plasma glucose levels intermediate between normal and those considered diabetic.*

   Blood glucose levels fluctuate and many factors may affect the outcome of glucose tolerance tests. A stressful situation may elevate blood glucose levels, plus diet, exercise and a number of other factors even though a person fasted 10 to 16 hours before the tests. Just because a person's glucose levels are a little higher than normal does not necessarily mean that his insulin secretions are not normal.

4. Derangement Of Function

There are several major areas where functional derangement is especially evident in diabetes.

4.1 Hyperglycemia

A partial or absolute lack of insulin secretion results in excess glucose in the blood. Glucose is the primary fuel for all body tissues. The brain utilizes 25% of the total body glucose. Because brain energy stores are very small, a constant supply of glucose must always be available to maintain adequate brain function. It is, therefore, imperative that the blood glucose level be maintained in the 60 to 120 mg/dl (deciliter) range to prevent central nervous system impairment. The body has special homeostatic devices to maintain this required range.

4.1.1 Insulin

Insulin is the primary hormone for regulating blood glucose levels and does so by controlling the rate that blood glucose is taken in by muscle, fat and liver cells. Each of these three types of cells utilizes glucose in a different way, as determined by specific enzyme systems.

Fat Cell

The primary function of the fat cell is providing storage. It contains unique enzymes that convert glucose into triglycerides as well as enzymes that convert triglycerides to fatty acids. These fatty acids are released and converted to ketones in the liver, when needed.

The conversion of glucose to triglycerides and the breakdown of triglycerides to free fatty acids take place continuously and simultaneously within the same fat cell, and both processes are regulated by insulin. High blood insulin levels stimulate the uptake of glucose by fat cells to form triglycerides; thus there is a net gain of storage fat. During low blood insulin levels, glucose uptake into the fat cell is poor; thus less triglyceride is formed. Triglyceride breakdown then exceeds formation, resulting in a net loss of the storage fat. Thus, by regulating glucose uptake into fat cells, insulin can influence net fat metabolism.

Insulin also inhibits the enzyme lipase, which breaks down storage fat into fatty acids and glycerol. When insulin is high and lipase is inhibited, there is also a net increase in storage fat. There is a net decrease in storage fat when insulin is low, because lipase becomes activated and a fat is then broken down.

Muscle Cell

The muscle cell has two primary functions: it converts glucose into energy needed for muscle function, and it serves as a reservoir for protein and glycogen. During starvation, the protein of the muscle itself can be made available in the form of amino acids. These amino acids can then be converted in the liver into glucose in order to maintain blood glucose at an adequate concentration for brain function.

In the muscle cell, as in the fat cell, insulin promotes the uptake of glucose. The muscle cell, however, has different enzymes that control two metabolic pathways for glucose. First, glucose can be converted into "contractile energy." Second, glucose can be converted to glycogen, a storage form of glucose that is more readily available than triglycerides in times of glucose insufficiency.

When blood glucose levels are normal, insulin also affects the enzymes of the muscle cell to maintain muscle mass by promoting the uptake of amino acids and preventing the breakdown of protein.

Liver Cell

Liver glycogen is another storage form of glucose. Glycogen is more readily available for use than are

triglycerides, which first have to be converted to free fatty acids and then converted to ketones. The liver monitors these conversions and also converts amino acids to glucose when necessary. The conversion of amino acids to glucose is called gluconeogenesis.

Although insulin is not required for the transport of glucose into the liver, insulin directly affects the liver to promote the uptake of glucose by reducing the rate of glycogen breakdown, increasing glycogen synthesis, and decreasing the rate of gluconeogenesis.

4.1.2 Beta Cell

Insulin is secreted by the beta cells of the pancreas. The beta cells function first as a sensor of blood glucose levels. The beta cells then secrete enough insulin to regulate the carbohydrate load, maintaining the blood glucose level within a very narrow range. A feedback system exists whereby a small amount of carbohydrate stimulates a small amount of insulin release. The liver responds to increased insulin secretion by suppressing glycogen release (glycogenolysis). The formation of new glucose is likewise suppressed. A large carbohydrate intake stimulates a greater insulin response, and the peripheral and liver cells take up glucose. When glucose levels are low, insulin release is suppressed and glycogenolysis and gluconeo-genesis occur in order to feed glucose into the system and maintain the blood glucose levels.

When the body is enervated and a state of toxicosis exists, all bodily functions will be impaired. This may effect the pancreas and its secretion of insulin. When insulin secretion is abnormally diminished, glucose will not be utilized by the fat and muscle cells and the liver will continue to break down glycogen to glucose to further add to the blood glucose levels. Hyperglycemia is then present.

Other hormones contribute to the release of glucose in the blood and further complicate the situation when insulin secretion is diminished. Stress stimulates epinephrine release and the hormone then serves to mobilize glycogen to yield a higher blood glucose level. Epinephrine also suppresses insulin release to further enhance blood glucose levels. Glucagon and cortisol also increase levels of blood glucose.

4.2 Large Vessel Disease

Diabetics have an increased incidence, earlier onset and increased severity of atherosclerosis and calcification of the arterial wall. Peripheral vascular disease is 50 to 100 times more common in diabetics than in healthy individuals. More fat is broken down when insulin is low and enters the bloodstream. Excess fat in the blood may then accumulate in the large vessels of the heart or elsewhere.

It is likely, however, that there is already some arteriosclerosis in diabetic patients, not because of the diabetes, but it is due to the same conditions that resulted in the diabetes in the first place. That is, a diet too high in fats and sugars, lack of exercise, and a generally unhealthful lifestyle.

4.3 Microvascular Disease

Many diabetics demonstrate a thickening of the capillary membrane in major areas of skin and skeletal muscles. This is most obvious in the retina of the eye and the renal glomeruli of the kidney and this situation may eventually lead to blindness or kidney failure. It becomes clear that diabetes is not a "one-organ disease" but does indeed involve the entire system. Suppressing one symptom, such as hyperglycemia, certainly does not produce health.

4.4 Neuropathy

Neuropathy involves injury to nerves, associated with destruction of the myelin sheath of nerve tissue and nerve cell degeneration. This involves sensory and motor nerves, nerve roots, the spinal cord, and the autonomic nervous system. Affected nerves show basal membrane thickening similar to the capillary

abnormalities.

Did the diabetes cause this nerve degeneration? No, diabetes is merely a symptom of a systemic disorder. Again, this "disease" that is associated with diabetes is another indication of systemic involvement.

4.5 Ketoacidosis

The fat cell attempts to provide fuel in the absence of insulin by mobilizing fat stores. The free fatty acids are initially utilized for energy production, but the majority reach the liver where three strong acids are found: acetoacetic acid, beta-hydroxybutyric acid and acetone. The keto-acids are ultimately excreted by the kidneys along with sodium bicarbonate. The combination ketoacid accumulation and bicarbonate excretion causes a fall in plasma pH, resulting in acidosis.

A diet high in acid-forming foods further complicates this problem. This would include such foods as meat, dairy products, dry beans, most cereals (especially wheat) and all refined sugars.

5. Symptoms

Early symptoms are polyuria (excessive elimination of urine), polydipsia (excessive drinking of water), polyphagia (excessive eating), loss of weight and a lack of energy. The extremely high extracellular osmotic pressure, caused by the excessive amount of sugar in the bloodstream, causes dehydration of the body cells. As the sugar is then eliminated by the kidneys, it carries water with it, thereby dehydrating the bloodstream and other extracellular fluids. Both the extracellular and intracellular dehydration cause excessive thirst and water drinking.

Since the diabetic cannot store glucose or glycogen, nor use it for fuel and energy, he has a tendency to lose weight. He is lacking in energy, despite the inordinate eating. The lack of energy may also be due to the fact that muscles respond better when using carbohydrate for energy than when using fat, which the diabetic must do. It is thought that the loss of proteins from muscles also causes part of the energy lack. Much of the energy lack is also due directly to the lack of insulin, for it is necessary for regulation of the oxidative reactions in the cell.

In children the classical symptoms may come on very quickly, as if the disease develops overnight. Of course, we know that it doesn't. In most cases, even in children, there is a slow development of the symptoms, lasting months or years. It takes a period of unhealthful living to accumulate the toxins that result in these symptoms. Sugar may be present in the urine occasionally or even continuously for years and never produce symptoms enough to cause alarm. In so-called latent diabetes, there is usually a slight hyperglycemia, discoverable only by special tests.

Other early symptoms are generalized itching, or itching of the female genital organs, boils, carbuncles, eczema, sometimes steatorrhea due to inflammation of the pancreas, and neutritis. Retinitis, acidosis, coma and gangrene are symptoms that usually belong to the later stages of the disease, but occasionally the disease is not realized until these dire consequences arise. Symptoms and clinical manifestations occurring that arise from a condition of acidosis are air hunger, coma, ketone bodies in the urine and lipemia.

Diabetes is thought to be hereditary. If any disease were truly hereditary, it would manifest itself early. If not, and it takes years to develop it, then we must assume that something else must be responsible for its development. You may inherit a tendency to diabetes, but whether or not you develop it depends upon

your mode of living.

Most cases of diabetes occur in people over 40. It often takes many years of unhealthful living to develop the conditions for diabetes to exist. It takes a lot of abuse to bodily organs and systems to result in the degeneration of the pancreas and other organs intimately involved in this abnormal condition. There are no "miracle cures" that will eliminate all those years of abuse. However, if all of these errors are corrected, the body will heal as long as there is not permanent damage. At any rate, a change to a more healthful lifestyle will result in better, if not perfect, health.

6. Medical Diagnosis

The physician has several diagnostic methods for diabetes and none are foolproof. The most widely-used methods are the serum blood glucose test and the urine test. The presence of glucose in the urine indicates that the body is attempting to maintain balance. When glucose levels reach a certain point in the blood, excess will be eliminated by the body through the urine. This is a bodily mechanism to keep itself in a stable condition and is a positive sign of self repair. However, this homeostatic mechanism can be exhausted if causes are not removed.

Testing of the urine for levels of glucose is one of the most common but least effective methods of screening for diabetes. The urine test will be positive for glucose only after the blood glucose values have become sufficiently elevated to allow glucose to spill into the urine, usually a blood glucose value of 180 mg/dl or more. Thus the urine test will be positive in advanced states of disease. However, there is also the possibility of obtaining a *false* positive indication. If an individual has recently eaten a breakfast of sugar-coated cereal, this would be enough sugar to cause a false positive test. A false negative can also result and does not outrule diabetes.

The fasting blood glucose test is probably the most frequently-used laboratory test for diabetes. It is still not totally reliable. A patient is given a sugar-type drink after fasting 10 to 16 hours and his blood is tested after 1, 1 1/2, 2 and 3 hours. If the glucose level rises and remains high, diabetes is suspected.

There are other tests utilized but they are meaningless here. Diabetes or any disease cannot be corrected by suppressing one symptom. The total person must be considered since the total organism is involved. Insulin will get rid of the glucose in the blood but it does not correct the condition and does not remove the underlying cause (toxicosis).

Diagnosis is a useful tool if diabetes is detected early and he person becomes aware of the results of his wrongdoing. and can then remove the need for disease and regain health without using insulin or any other drugs. The diabetic can then completely regain health. If nothing is done and the unhealthful lifestyle is persisted in, diabetes may progress and ketoacidosis may result. The possibility of ketoacidosis is suggested by

1. confusion or coma, the person becoming extremely ill with changes in sensory mechanisms;
2. air hunger (this is an attempt to compensate for metabolic acidosis through rapid breathing in order to eliminate as much carbon dioxide as possible to increase alkalinity);
3. fruity acetone odor on the breath (acetone is produced in excess in diabetics when the fats are not properly oxidized, due to inability to oxidize glucose in the blood);
4. nausea and vomiting;
5. abdominal tenderness;
6. extreme thirst and dry mucous membranes, reflecting water depletion due to loss of sodium and

potassium as the body tries to buffer the acid condition with these base minerals;
7. weight loss.

Do the above symptoms indicate anything other than systemic involvement? No. Then we should consider the body as a whole and not as separate units.

7. Medical Treatment Of Diabetes Mellitus

According to the *Merck Manual*, "The primary objective is to achieve the patient's optimal health and nutrition." If this truly were their primary objective, physicians would discontinue looking to drugs for palliatives and begin to search for the underlying cause behind this "disease." If they were to discover that depressed function of the pancreas of insulin secretion is really only a symptom of general toxicosis, they would begin to teach their patients how to live so as not to create these conditions that result in ill health.

Merck Manual further states, "Whether treatment of asymptomatic hyperglycemia decreases morbidity and mortality is unknown, and there is significant risk of hypoglycemia in elderly patients given oral hypoglycemic agents or insulin therapy." It is known that drugs and insulin can harm and whether they do any good is questioned even by the physician. People with improperly-diagnosed diabetes have been placed on insulin. Because of the presence of this insulin in the blood, the pancreas ceased to secrete normal insulin, atrophied and eventually ceased to work even when needed. Thus, diabetes was *created* where it was not formerly present.

Scientists have come up with a new form of insulin that is supposed to simulate functions of the pancreas in that it supplies insulin constantly at low doses. It is called an insulin pump and is worn on the belt. It constantly infuses a low dose of rapid-acting insulin subcutaneously or intravenously with additional boluses of insulin pumped in immediately prior to meals.

It is hoped that these attempts to emulate normal pancreatic function may be associated with a clearly demonstrable improvement in the morbidity and mortality from the vascular and neural manifestations of diabetes. However, this cannot be possible with this approach. The physicians are looking at the situation too narrowly. The entire person must be considered and not only the pancreas. Palliating one symptom of ill health does not procure overall health.

According to the physician, the objectives of symptom control are twofold: (1) to avoid ketoacidosis, and (2) to control symptoms resulting from hyperglycemia and glucosuria. Symptom control involves constant monitoring of urine glucose levels and plasma glucose levels by laboratory determination. As stated, symptom control does not procure health.

8. Effects Of Insulin

There are seven forms of insulin currently in use and they are grouped into three classifications

according to their duration of action. They are fast-, intermediate-, and long-acting. Most insulin is made from beef or beef/pork pancreas. Some is now being made from only pork. All of these insulins contain pancreatic impurities including glucagon, somatostatin, pancreatic polypeptide, and proinsulin. Experiments with purer strains are now being tested since many patients have had adverse reactions from the impure type of insulin. The body rejects what is not normal and foreign protein injected into an organism is treated as a poison and eliminated as quickly as possible. Other complications may arise from insulin treatment.

Insulin shock (hypoglycemia) may occur if too much insulin is taken. Local reactions to insulin injections, often occurring during the first few weeks of insulin therapy, most commonly consist of stinging or itching at the injection site followed by heat, induration, erythema, and an urticarial reaction. Systemic reactions may include hives, urticaria, cardiopulmonary or gastrointestinal symptoms, and rarely, anaphylactic reactions. In this case, higher doses of insulin are given or more purified types are given.

All of these symptoms are indications of a bodily response to unwanted agents outside of the normal constituents. Concerning this palliation, Dr. Vetrano writes, "Medical treatment for diabetes is insulin. Symptoms only are treated with no effort to eliminate the cause. This does not help the patient to regain health. On the contrary, besides the side effects of foreign protein, it perpetuates the disease. If normal functioning cells were left before beginning insulin treatment, these soon atrophy from lack of function. The diabetic of today may live longer than diabetics of the past; but nothing constructive has been done to eliminate toxemia, so he is doomed to live the life of a vampire, because the death of other animals is necessary for his life. The toxemia which caused his first disease is not eliminated and he lives only to suffer from the effects of his drugs and toxemia."

It has been said that the rise in the death rate in diabetes is "in spite of insulin." Dr. Shelton says that it is because of insulin. He states that insulin is, both directly and indirectly, the cause of a large part of an increased death rate and is a big factor in preventing thousands of diabetics from recovering.

It has been proven that insulin does not "cure" diabetes and that it does not even improve the condition. According to Dr. Shelton, insulin is presented to us as a crutch. He explains that insulin is something the diabetic can lean upon and it will enable him to "live a normal life" in spite of diabetes but it is still employed as a crutch. But by "living a normal life" is meant eating and drinking and living in a conventional manner—in the manner that produced the diabetes and other troubles in the first place. The employment of a crutch always leads to ignoring causes. The use of insulin encourages patients to continue doing things that are known to make diabetes worse. If more enervation, or added toxemia, or continued overeating results in an increase of symptoms, the physician quickly sets matters right by increasing the dose of insulin.

Insulin reduces the sugar in the urine and blood but it has no effect on the causes of diabetes. While it aids in controlling one symptom, it constitutes an added cause.

Dr. Shelton says, "Insulin is a powerful drug. A slight overdose causes a light insulin shock; a little more produces coma; a little more results in death. The continued use of this drug produces damage of its own, not the least of which is the added impairment of the function of the pancreas."

9. Oral Hypoglycemic Agents

Often, oral medication is given to diabetics instead of insulin to control the symptoms. It is said that

some sulfonylureas lower the blood glucose levels when given orally. These include tolbutamide, chloropropamide, acetohexamide and tolazamide. The University Group Diabetes Program attempted to evaluate various types of therapy, in noninsulin-dependent diabetic patients, comparing tolbutamide or phenformin treatment with diet alone. They concluded that these two drugs were no more effective in controlling diabetes than diet alone.

There has been some evidence that the use of these drugs increases cardiovascular mortality but this has not been proven conclusively and more research needs to be done. However, acute toxic effects have been known to follow the use of these oral hypoglycemic agents. There is no doubt that these agents are poisons and should not be employed.

10. The Diabetic Diet

The conventional diabetic diet is calculated in terms of the total requirement for calories and a ratio of these calories in grams of carbohydrates, proteins and fats.

10.1 Calories

Calorie specifications are based on "ideal weight," with allowances for physical activity or added stress, such as growth. If the patient is obese, as many adult diabetics are, then the diet prescription would indicate a sufficient reduction in calories to effect a gradual weight loss—no more than 1,200 to 1,500 calories per day. If the patient is a fast-growing, lean, adolescent boy, the calories may be as high as 4,000.

Weight will normalize on a diet that is compatible with our biological requirements. That is a diet of raw fruits, vegetables, nuts and seeds. "Ideal weight" charts are invariably too high and not accurate guides. Calculating diets based on preconceived numbers of calories per day is tedious and unnecessary. Furthermore, few diabetics will adhere to such a diet.

10.2 Protein

It is generally recommended that 5% of total calories of the diabetic be protein. In a 1,500-calorie diet that would mean 75 grams of protein. This amount of protein greatly exceeds the needs of even the most active man. The average person cannot utilize more than about 20 to 25 grams of protein daily.

Any protein in excess of this is either stored in fat or muscle or eliminated from the body. This is an expenditure of vital energy that should be used for healing and repair—a situation that will result in enervation. Such excess protein accumulated in the tissues eventually results in impaired function. The body periodically makes great efforts to eliminate these excesses through such eliminative endeavors as colds, flu, skin eruptions, etc. If the body is greatly enervated, such vital eliminations may not occur and degenerative diseases will begin to develop.

Every item of food that we eat has some protein when it is consumed in its natural state. Even fruits and vegetables contain some protein. In fact, it is in this form that protein is most easily utilized and requires the least amount of vital energy to digest and assimilate. Also, we do not clog our system with excess toxins as we do when we consume the protein of flesh, dairy products or eggs. It is important that the diabetic consume foods that require little vital energy to digest and also contain little or no toxins. Energy is needed for healing and further toxins will impair this process.

10.3 Carbohydrate

There is less emphasis now upon strict carbohydrate control than in past years for the diabetic. As a general rule, the carbohydrate grams recommended are 10% of the total number of calories. Refined carbohydrates certainly should never be consumed such as cookies, pies, cakes, candy, etc. However, the simple carbohydrates as found in ripe fruits and vegetables should form the bulk of the diet. The carbohydrates of fruits are easily assimilated and also contain many of the base minerals that are so important in the diabetic's (and in everyone's) diet. You can be assured that all your needs will be met.

10.4 Fat

As a general rule, the grams of fat in the diabetic diet are recommended to be 5% of the number of total calories. (In a 1,500-calorie diet, there would be 75 grams of fat.) This is entirely too high. You cannot utilize that amount of fat and the excess adds to toxicosis. All the fat that you require is found in nuts and avocados. If these items are eaten moderately a few times a week, your fat requirements will be met. Remember that your fruits and vegetables also contain small amounts of fat.

While it may be necessary to continue insulin therapy to a certain extent, a diet of fruits, vegetables, nuts and seeds will provide the body with the proper conditions to heal and repair. The pancreas will no longer be stressed with large amounts of glucose in the blood due to refined sugars in the diet and healing will take place.

10.5 Food Exchange Groups

The conventional program for diabetic diets utilizes a food-exchange system where foods of like proteins, fats and carbohydrates are grouped together. The patient is assigned a certain number of units that he may have per day from each group and he may exchange them for certain foods within that group. This is a tedious procedure that is slowly being abandoned even by the physicians and most dietitians. It is unnecessary if the general dietary program is correct. As stated earlier, a diet of ripe fruits, vegetables, nuts and seeds, all in a raw state, provides us with all our dietary requirements without excesses or deficits.

10.6 "Anything Goes Diet"

Another approach that is now being taken is to let the diabetic eat anything that he wants. Sometimes refined sugar is eliminated but not always. S/he is then closely monitored and insulin doses adjusted accordingly, as needed. This is certainly unwise and cannot produce health. People need to be educated in regard to the proper diet and not let them grope on their own. If a person stays on his conventional meat, potatoes, bread and sweets diet, more ill health will result. Causes must be removed in order to regain health and an improper diet is a major cause of diabetes and other chronic disorders. That is, the toxicosis that resulted from the improper diet.

11. Why You Have Diabetes

It is your total way of living that causes you to develop diabetes—your excesses, deficiencies and poison habits. Excesses include: overeating, overworking, wrong emotions, worry, anxiety, tension, etc. Deficiencies are: lack of sleep, lack of rest, lack of exercise, demineralized foods, lack of fresh air, lack

of sunshine, and lack of emotional poise. Finally, by your poisonous habits, you add to the total toxic load of the body. You poison your body with alcohol, coffee, tea, soft drinks, cigarettes, poisoned articles passing for food, the many drugs thrown into your system daily to suppress the discomforts arising from a way of life that is destructive to health. The real cause of diabetes came before the deficiency of insulin.

Dr. Vetrano says that most writers on the subject think that there is a definite link between diabetes and civilization. In more primitive atmosphere it would naturally follow that there would be fewer cases of all varieties of diseases, including diabetes. In primitive conditions food is more natural, working hours fewer, more sleep and rest can be obtained, air and water are purer, there is less tension and worry, and the way of life more simple in general. More sunshine and exercise are incorporated into each day. Primitive living is more healthful, hence, fewer diseases develop.

Dr. Shelton says, "Diet and drink, sleep, work and play, and many other factors enter the cause of every so-called disease. Any form of overstimulation—mental, emotional, sensory, physical, chemical, thermal, electrical—may give rise, first to functional, and, finally, to organic disease. Diabetes is a functional disturbance at its beginning."

Diabetes is more prevalent in those countries where sugar consumption is highest—United States, France, Germany and Great Britain. Every fat person is a potential diabetic. Overeating results in overwork of the pancreas and as overwork of any organ results in impairment of the function of the organ, pancreatic failure results. If its causes are not corrected, functional impairment gradually passes into organic disease.

Carbohydrate excess (in refined form) places a strong stress on the pancreas and when this gland is overworked by too great an intake of starches and sugars, there will be first, irritation and inflammation, then enlargement, followed by degeneration. The body then loses control of sugar metabolism.

However, overeating of refined carbohydrates is not the sole contributor to pancreas impairment. Anything that produces enervation—tobacco, tea, coffee, chocolate, cocoa, alcohol, cola, loss of sleep, overwork, general overeating, emotionalism, etc., impairs organic function in general, including pancreatic function.

12. How You Can Improve Your Overall Health

Many people think that once they are diagnosed as a diabetic they are doomed to a life of dependency upon drugs, and forced into a life of suffering from the general toxic effects of those drugs. However, this is not the case. The adoption of a healthier way of life would permit them to live to a ripe old age without drugs and their poisons. But the choice rests with the individual.

A fast is important to allow the body to rid itself of toxins. If you have been on insulin for more than two years, however, great care must be taken. The insulin dosage must be cut down very gradually. If there is a complete degeneration of the islets of Langerhans, you may be compelled to take minute doses of insulin for the rest of your life, but living healthier will keep you in better condition than the average diabetic. You will be able to escape the degenerative diseases that usually complicate diabetes.

Dr. Vetrano states, "For those who still have good functioning tissue, health can be regained and maintained. It is amazing what the human organism can do for itself in the way of rejuvenation of sick cells when poisoning is discontinued and toxemia is eliminated and a plan of care is instituted that

provides the body with the primordial requisites of life."

Dr. Shelton explains that once a person has become enervated, recovery of nerve energy needed for healing requires conservation of energy and removal of all enervating influences. He further says that improper eating is undoubtedly an important factor in the causation of diabetes, but most diabetics have many other unhealthful habits besides wrong eating, and all these habits must be corrected.

For those who cannot fast, recovery is still possible. While fasting is of great value in diabetes, it is more important that the diabetic learn how to live, learn what foods he can take, learn his limitations and learn to live within these, and that he fast. Recovery can occur only after cause has been removed and fasting is but one part of the process of removing cause.

The diet of the diabetic should be the same as for a healthy person. That is, raw ripe fruits, vegetables, nuts and seeds. At first, it may be necessary to eliminate dried fruits and some of the sweeter fresh fruits until a higher degree of health is achieved. On this diet, physiological functions will normalize and health will be restored as long as there is not any permanent destruction of tissues. In any case, a much healthier overall condition will be attained.

1. Introduction

Diabetes insipidus is much less common than diabetes mellitus. It is a disorder where there is either a deficiency of vasopressin (ADH) or an insensitivity of the kidney tubules to the presence of this hormone.

The hypothalamic nuclei of the pituitary gland secretes the antidiuretic hormone. This hormone acts mainly in the distal-collecting tubules of the kidney and stimulates the reabsorption of water according to bodily need. Onset of this "disease" is said to be insidious or abrupt and may occur at any age. However, we know that no disease occurs abruptly but it develops only after a period of time due to unhealthful practices.

2. Symptoms

Enormous quantities of fluid may be ingested and excreted (3 to 30 liters per day). Urination is especially excessive during the night. Dehydration develops rapidly if urinary losses are not continually replaced.

3. Medical Treatment

The usual treatment is hormonal therapy. ADH is administered either via a nasal spray or intramuscular injection. Nonhormonal therapy involves the use of certain diuretic drugs. This palliative treatment cannot result in health. It only treats the symptoms of this disease without considering causes. Other systemic disorders are present in this disease, such as chronic renal disorders and other systemic or metabolic impairment.

To treat one symptom is foolish. As in diabetes mellitus, the underlying cause of ill health must be corrected and only then will general health result.

1. Introduction

Hypoglycemia is abnormally low blood glucose level. This is a condition where the islets of Langerhans are too sensitive. In response to the metabolic demand, they secrete too much insulin. The liver converts too much sugar into starch, leaving too little in the circulating blood. The final result of eating a meal is a drop in blood sugar. The sufferer from this condition is always hungry and no amount of eating will keep the level of his blood sugar where it belongs.

Overindulgence in sweets tends to sensitize the islets of Langerhans by subjecting them to repeated stimulation and exercise. The body overcompensates, as it were, thus disorganizing and upsetting the internal hormone balance. Here then, is the connection between sugar and starch addiction and hyperinsulinism.

Another factor is the indulgence in any substance that contains caffeine. Caffeine (a drug found in many beverages like coffee, tea, coca cola and soft drinks, cocoa, chocolate, etc.) is a common cause of the upset of the delicate mechanism involved in sugar tolerance. Caffeine results in the stimulation of the adrenal cortex and more of its hormones are produced. These hormones, in turn, induce the liver to break down glycogen into glucose that flows into the bloodstream. The islets of Langerhans go to work to secrete insulin to force blood sugar to its normal levels.

In the course of time, because of their repeated stimulation, the islets become so sensitive, due to enervation, that the delicate control is lost and they overrespond to a normal stimulus.

2. Other Factors

Other factors may produce hypoglycemia. An overdose of insulin by the diabetic patient often results in hypoglycemia. Depending on the amount, this can result in coma or even death. Certain oral hypoglycemic drugs such as the sulfonylureas often result in low blood sugar. Hypoglycemia can be induced by alcohol, salicylates (in aspirin, etc.), and other drugs such as aminobenzoic acid, halopenidol, propoxypene and chlorpromazine.

Deficiency of contrainsulin hormones such as glucagon, cortisol, growth hormone, epinephrine or thyroid hormones can result in low blood sugar. In fact, any excess or deficit in any gland or organ may

have some effect. This is so because the body works as a unit and never as separate parts or units.

As in diabetes mellitus, not any one factor results in hypoglycemia but it is the total effect of our general lifestyle that affects our health. For example, our diet may be perfect but if our sleep is insufficient, all vital organs will be affected.

3. General Symptoms

Most physicians group the symptoms of hypoglycemia into two categories:

1. Faintness, weakness, tremulousness, palpitation, diaphoresis, hunger and nervousness, such as may result from epinephrine administration
   Epinephrine is a hormone that has multiple effects to prepare the body for many different kinds of stress. Its effect on glucose is very rapid and can produce minute-to-minute changes in blood glucose levels. Stress stimulates epinephrine release, and the hormone then serves to mobilize glycogen to yield a higher blood glucose level. Epinephrine also suppresses insulin release to further enhance blood glucose levels. Acute hypoglycemia with epinephrine-like symptoms indicates that endogenous epinephrine-induced glycogen mobilization has already started.
2. A pattern of central nervous system symptoms including headache, confusion, visual disturbances, motor weakness, palsy, ataxia, and marked personal changes. These CNS disturbances may progress to loss of consciousness, convulsion and coma. With recurring episodes of hypoglycemia in the same patient, the symptoms may be repetitive, although the tempo and severity of an attack may vary

   Symptoms of anxiety, including sweating, headaches, hunger, tachycardia, weakness, and occasionally seizures and coma may suggest hypoglycemia but not necessarily. At any rate, the underlying cause is the same and that is enervation leading to toxicosis and eventual impairment of all (not just one) bodily functions. The various symptoms demonstrate systemic involvement.

3.1 Mind/Body Symptoms

If the blood sugar drops too low, the nervous system is in jeopardy. The brain relies on blood sugar for its functioning, and if it is deprived of it, it cannot continue. This is what happens when a diabetic gets an overdose of insulin. All the sugar enters the cells. There is none readily available for the brain, so the person lapses into a coma. Though such a drastic drop in blood sugar is not usually experienced by the hypoglycemic, the decrease is still interpreted as a danger signal, and the adrenal glands usually respond by secreting adrenalin. This helps mobilize stored glucose from the liver, but it also sets off a general alarm, alerting the whole body as for emergency action. One may feel apprehensive, tremulous and find that his/her heart is beating rapidly, his/her hands are becoming cold and clammy and s/he is breathing in a rapid and shallow way. How severe these symptoms are depends on how low the blood sugar drops and how drastically the adrenal glands respond.

It has been demonstrated that those who experience drastic dips in their blood sugar levels excrete more of the breakdown products of adrenalin in their urine. They are repeatedly responding as though to danger. The result can be an overall feeling similar to what we call "anxiety." It has been proposed that drops in blood sugar constitute a sort of "internal stress" and may create a great deal of wear and tear on the individual, both provoking mental problems, aggravating emotional crises, and increasing irritability and difficulty in working with others. Such chronic stress and the resulting chronic anxiety could be a

factor in the development of ulcers, headache or simply general enervation.

Though hypoglycemia may be one aspect of the development of any of a variety of disorders, it cannot itself be called the "cause" of anything. It is rather one symptom in a chain of events that may have begun with the improper selection of food, along with lack of rest or exercise, etc., and continues to worsen as these bad habits are continued.

4. Medical Diagnosis

The generally accepted method of diagnosis of this condition is the glucose tolerance test. This is usually carried out in the following manner. For three days, a high-carbohydrate diet is eaten. On the fourth day, the level of blood sugar is tested in a fasting state, and a drink containing a great amount of sugar is given. Then, on an hourly basis, blood samples are drawn and checked for sugar content. The test continues for five to six hours. Typically, in a hypoglycemic, the blood sugar level does not increase at the normal rate. The initial rise is followed by a steep fall to below-fasting levels.

In any person who is in an enervated condition, blood sugar levels may not rise to normal levels for a considerable time due to this enervation. It does not necessarily mean that the individual has hypoglycemia. It does indicate that the individual is in a generally poor state of health but a glucose tolerance test is really not needed to determine this.

In this case, diagnosis is really a useless tool. All the physician has to do is to instruct his patient how to live for total health and all symptoms of ill health will disappear when a healthier lifestyle is adhered to.

5. Medical Treatment

In acute or severe episodes of hypoglycemia with central nervous system symptoms, physicians usually recommend ingestion of oral glucose or sucrose. This relieves the symptoms by flooding the blood with glucose but it also stimulates the pancreas to secrete another dose of insulin and the blood sugar is reduced to even lower levels than before the glucose was ingested. No good is achieved by this treatment and the condition is only made worse.

Generally, the hypoglycemic patient is advised to adhere to a low-carbohydrate diet similar to that of the diabetic. Basically, this means eating from four to six small meals a day, each of them containing a generous amount of protein. Sugar in any form is completely forbidden. Besides no ice cream and cake, this means no processed foods of any kind to which sugar has been added. Coffee, tea and alcoholic beverages are also forbidden.

6. Concentrated Sugar

The body is really not set up to handle concentrated sugars. Although 'sugar' (not refined) is the fuel that runs our entire body, using concentrated forms of sugar found in pastries, pies, sugar-coated cereals, candy, etc., overloads the delicate control mechanism and the pancreas overreacts by producing too much insulin. There will then be a signal for food and too often a wrong choice is made when this need is acute. Thus a vicious circle is established with general effects upon our entire system and all the attendant symptoms resulting from it. Often, too little fruits and vegetables are used. Instead, the convenience-type foods take over a large percentage of the daily intake.

7. Conversion Mechanism

The sugar that the body cannot use as energy when it has been acted upon by insulin will be converted to glycogen, and is stored in the liver and muscles; or what cannot be stored as glycogen will be converted to fat.

In normal body function, there is a conversion mechanism that protects us against the rapid drop of blood sugar. The adrenal glands secrete a hormone (epinephrine) that begins the change process of glycogen back to glucose. This same response is brought into play when fear, anger or expenditure of energy requires lots of fuel, so glycogen from the liver and muscles is immediately turned into glucose.

If the glycogen conversion mechanism is not working well, the body has a backup mechanism. This consists of the conversion of amino acids and triglycerides into a fuel. Amino acids are capable of being converted to glucose but do so at the expense of tissue repair and making of enzymes, hormones and other essential processes which require amino acids. Since it is a kind of emergency assistance, you can easily imagine how the body suffers if this must take place on a continual basis.

Carbohydrates are converted to glucose in the gastrointestinal tract and absorbed into the bloodstream where they then pass on to the liver. If there is too much glucose, the liver will convert it to glycogen and store it until needed. When blood glucose levels drop, a hormone from the adrenals (epinephrine) facilitates the conversion back to glucose.

Many of these mechanisms are dependent upon hormones, and particularly upon adrenal hormones. Many physicians are convinced that the single most common cause of hypoglycemia is a poorly functioning adrenal system,. However, we must also ask, "What caused the adrenal system to go amuck?" It is the same reason that caused the hypoglycemia and other symptoms. That is, general enervation and toxicosis. Underlying causes must be sought. You must stop treating symptoms and begin correcting the errors behind the symptoms.

8. Hormones That Maintain Balance

Several important hormones play significant roles in maintaining blood glucose balance:

1. *Cortisol (hydrocortisone) and cortisone*
   Cortisol and cortisone belong to a class of steroid hormones synthesized in the cortex of the adrenal glands, known as glucocorticoids. They have a primary effect on carbohydrate, protein and lipid metabolism. They are in many ways antagonistic to insulin. They elevate blood glucose and increase production of glucose from protein.
2. *Adrenocorticotropin (ACTH)*
   This Hormone is liberated by the anterior pituitary gland and stimulates the cortex of the adrenal glands. If too little of this hormone is secreted, the adrenal glands will secrete too little of their hormones and if ACTH is present in too large amounts, adrenal hormones will be secreted in too large amounts.
3. *Growth Hormone (Somatotropin)*
   Growth hormone is the only hormone of the anterior pituitary gland that does not exert its effect on other endocrine glands. Growth hormone or somatotropin is a protein. It stimulates growth, increases protein synthesis, decreases carbohydrate utilization, and increases fat catabolism. Because somatotropin suppresses carbohydrate utilization, blood glucose increases, stimulating insulin secretion. Two factors from the hypothalamus control secretion: the growth hormone releasing factor and the growth hormone release inhibiting factor. During protein deficiency, growth hormone secretion increases as it does when the blood sugar level falls. Exercise increases secretion also.
4. *Epinephrine*
   In times of stress, small amounts of epinephrine (adrenaline) are discharged from the adrenal glands into the bloodstream. Epinephrine ultimately causes the release of a flood of glucose molecules from the liver into the bloodstream for quick energy for the muscles. One epinephrine molecule is thought to cause the release of about 30,000 molecules of glucose.
5. *Thyroid Hormones*

   Thyroxine and triodothyronine are two chemically similar hormones secreted by the thyroid gland. Both have the same physiological effect on tissues. The most obvious effect they have is to increase the rate at which cells burn glucose. They also work in "partnership" with cortisol in defending the body against stress resulting from extreme cold. In general, thyroxine comes into play when there is an extra demand for energy.

As you can see, there is an intricate relationship between all bodily parts and the disfunction of one affects all. The more you study physiology, the more you realize the foolishness of treating symptoms. They are merely indications of systemic impairment.

9. Progression Of Hypoglycemia

A vicious cycle begins to emerge when repeated errors of diet are made. These errors do not always result in hypoglycemia, but they can. In some persons, severe symptoms will arise elsewhere.

However, in the person demonstrating symptoms of hypoglycemia, this is what happens:

A concentrated sugar-containing food is consumed. Blood sugar begins to rise rapidly. Because of the intense sugar concentration of the food resulting in an abrupt rise in blood sugar, the pancreas is stimulated to produce a large amount of insulin needed to dispense the sugar. If the adrenals do not quickly produce a counter-balancing hormone to signal the end of insulin production, it is possible that blood sugar levels will fall below an acceptable level.

At this point, blood sugar levels are below normal and the signs of hypoglycemia are present: fatigue, headaches, irritability, etc. This will often be "cured" by the consumption of either a concentrated sugar product or an adrenal stimulant such as coffee, cola or nicotine. The cycle is repeated over and over, thus resulting in enervation of bodily organs and glands and toxic accumulation from the refined sugar products and other wastes.

10. The Liver

An organ in the body that plays a great part in the blood sugar regulation is the liver. It is in the liver that sugar is converted to glycogen for storage, then stored in the liver as well as muscle tissue, and, as needed, converted back into sugar again. It is easy to see the importance of good liver function for proper blood sugar levels.

The liver can be damaged or have its functional capacity reduced by several factors: alcohol consumption, tobacco, smog and toxic drugs. Fortunately, the liver is one of the fastest regenerating organs in the body and, once these factors are overcome, it will restore itself and carry out the many body functions it performs. It is these same factors that also result in impaired function of all of the other vital organs in the body and it is imperative that these errors in living be corrected for health to be restored.

Actually, large quantities of sugar should never reach the bloodstream in the first place. Food absorbed from the intestines is taken up by the portal vein and goes directly to the liver. Here all blood is filtered and nutrients are sorted out, some put in storage (in the form of glycogen) and others released for immediate use, according to what is appropriate. If the liver is healthy and is able to store glucose, then excessive amounts of this sugar are not dumped wholesale into the blood.

Hypoglycemia then, is not necessarily due to only an inappropriate insulin response but to a weak or sluggish liver that is unable to perform its duties properly. This is illustrated by alcoholics where the liver is damaged from habitual drinking. They are often hypoglycemic. Consumption of large amounts of protein put further burden on the liver.

There is no real reason why a flood of sugar has to be delivered to the bloodstream or to the liver. Whether it is or not depends on what kind of carbohydrate was eaten. White sugar is rapidly absorbed from the intestine and immediately floods the blood with glucose. On the other hand, carbohydrates in the form of fruits are absorbed more slowly owing to their more complex nature, and are therefore taken into the blood more slowly and the pancreas is not unduly stressed.

11. Hyperinsulinism

Hyperinsulinism is another term that is often used synonymously with hypoglycemia. (However, hypoglycemia is not necessarily accompanied by hyperinsulinism.) This term simply means too much insulin in the blood. Another interesting tie-in of the adrenal glands and the pancreas is seen here. When the amount of insulin necessary to do the job on a given amount of sugar has been secreted, it is the job of an adrenal hormone to send a message to the pancreas to stop producing insulin. A sluggish adrenal will be late in this function, thus allowing an overproduction of insulin with a resultant excessive lowering of the blood sugar. Epinephrine and norepinephrine act directly on the pancreatic islets to inhibit insulin secretion.

12. What To Do If You Have Symptoms Of Hypoglycemia

Fasting is the best way to quickly eliminate the toxemia that resulted in your hypoglycemic symptoms. Through the fast you will give your body the rest that it needs to carry on its job of cleansing and repairing.

People with hypoglycemia are often fearful of fasting. They believe they will go into shock if they don't eat some protein every few hours. But professional Hygienists have seen these people regain their health after a fast. However, they do need expert supervision.

Dr. William Esser says, "Hypoglycemia can very definitely be benefited by a fast." He says that functional types of hypoglycemia can be corrected without too much difficulty through fasting and a change in habits.

Since hypoglycemia is a condition that arises out of factors of irritation, abuse and exhaustion, involving the entire body, the only "remedy" for this exhaustion is rest. The body must be allowed to slow down and the stress factors must be eliminated as much as possible. A period of fasting under proper supervision is important for the purpose of fostering metabolic housecleaning and a thorough physiological rest for the exhausted organs and glands. All draining of functioning power must cease. Emotional, sensory, and physical power is restored by physiological rest.

The fast should be continued long enough to marshal all the power and force of the organism to regenerate itself and to return to normal functioning. It is only through the return of this power that the organs involved in blood sugar metabolism can resume the work that they have been created to perform.

After fasting, all refined foods and other harmful substances should be eliminated, especially white flour products, refined white sugar, alcohol, caffeine, salt and nicotine. Any small amount of these poisons may overstimulate and exhaust the pancreatic-adrenal mechanism, thus reactivating the hypoglycemic pattern.

The natural diet of humans is one of raw ripe fruits, vegetables, nuts and seeds. Dr. Frank Sabatino suggests that for a period of time, the elimination of certain foods, such as sweet and dried fruits, may be necessary. Even such an excellent food as bananas may be on the prohibited list for a while. In the fruit family, the more desirable items during this period, according to Dr. Sabatino, should be citrus (oranges and grapefruit), and sub-acid fruits (such as peaches, pears, apples). He also suggests a three-meal-a-day plan of one fruit meal and two salad meals, with ample use of greens, sprouts and avocados. After,

health is restored, more fruit meals with sweet fruits included may be eaten.

In addition, you should not neglect the other conditions for health such as proper exercise, fresh air, sunshine, emotional poise, rest and sleep. This is the only way to regain health and correct this condition of disturbed physiology.

Questions & Answers

Does the pancreas have any reserve capacity after it has been partially destroyed?

> The pancreas has an enormous reserve functioning capacity. This has been proven experimentally in animals where large amounts of pancreatic tissue have been removed. In these experimental animals, diabetes mellitus has been induced by different methods. The method most often employed is depancreatectomy. In order to attain significant diabetes, at least 90 to 95% of the pancreas usually must be removed, otherwise, the islets of Langerhans in the remaining pancreatic tissue will often be able to hypertrophy significantly to supply enough insulin for normal metabolic needs. This indicates that the islets of Langerhans normally have a tremendous reserve capacity.

I heard about a high-carbohydrate and high-fiber diet that is supposed to be a "miracle cure" for diabetics. Is this true?

> There are no "cures." The high-fiber diet may temporarily alleviate the symptoms because the glucose is entering the blood at a slower rate due to the types of complex carbohydrates that are eaten. However, no causes have been removed and the errors in living that resulted in diabetes have not been corrected. There is no other way to achieve health.

Why has the incidence of diabetes increased so dramatically in recent years?

> Statistics show that many more people are going out to eat now than ever before and they most frequently go to the fast food restaurants. Consumption of prepackaged dinners and other junk foods are increasing
>
> Also, people are exercising less and indulging in other enervating habits such as cigarette smoking, coffee, alcohol, etc. All of these factors lead to toxicosis and the end result, in many people, is diabetes.

Is there any other clinical evidence that diabetics have had success on a raw foods program?

> According to Dr. John M. Douglass, of the Southern California Permanent Medical Group and Kaiser Foundation Hospital of Los Angeles, diabetics who make an effort to eat more raw foods may be able to decrease or eliminate their need for insulin
>
> One of Dr. Douglass' patients, an elderly man, had been taking insulin twice a day. When he started eating more foods in their raw uncooked state, his insulin requirements began to fall. After four years, he was able to get by with just half his usual amount of insulin a day
>
> A second patient, a young Mexican-American man, complained to Dr. Douglass that he would rather die than continue taking insulin "shots." By shifting to an 80% raw diet, he was

able to control his diabetes with oral drugs alone. (Perhaps if a 100% raw food diet were implemented, he would have been able to dispense with the oral drugs also

What led Dr. Douglass to try the raw food regimen? "My rationale was that since early man lived entirely on raw food, perhaps such a diet would be less stressful to the human system in general and less diabetogenic than a cooked food diet." Raw vegetables, seeds, nuts, berries, melons and other fruits and part of Dr. Douglass program.

Article #1: Diabetes Mellitus by Dr. Herbert M. Shelton

This is the name given to a group of symptoms that center around an impairment of carbohydrate metabolism. Commonly we are told that it is a disease of the pancreas, but it is coming to be realized that it is a disturbance of the metabolic process involving the entire organism and not strictly localized in any one organ. It is, in other words, a manifestation of a systemic derangement and, however important the pathology in the pancreas may be, this is secondary to the systemic derangement which has resulted in the disease of the pancreas.

The Islands of Langerhans may be described as little organs within the pancreas or sweetbread. These structures produce an internal secretion commonly known as insulin which is essential to the oxidation of sugar. When they fail to secrete sufficient insulin an excess of sugar accumulates in the blood and is eliminated by the kidneys in the urine. Hence sugar in the urine (glycosuria) is the principal symptom of what the layman calls *sugar diabetes*. But it is a subordinate symptom and is valuable chiefly as a criterion of the progress of the condition.

The condition of the pancreas of diabetics has been thoroughly studied after death and the destructive changes therein found have been carefully described and catalogued. But the patient may have had diabetes ten or more years before death and the pathologist, studying the end-point of the pathological process after death, gives us false picture of the condition of the pancreas except the terminal stages of the disease. Thus the hopeless view of diabetes taken by medical men.

There is no destruction in the pancreas when the disease first begins and the destructive changes take place slowly against the weakened resistance of the body. Enervation (fatigue) of the Islands of Langerhans is the probable beginning of diabetes. It is toxemia that produces the pathology (the destruction) in the pancreas. Toxemia produces first a mild, chronic pancreatitis which may persist for a long time before marked damage to the pancreas occurs.

Under causes of diabetes, Dayton's *Practice of Medicine* gives "Heredity, male sex, adult life, Jewish race, obesity, cerebral or spinal disease or injury, infectious diseases, overwork and nervous strain predispose. Actual cause is unknown. Pancreatic disease is probably important."

Heredity! Male sex! Adult life! Jewish race! These are not causes of anything. If adult life predisposes to diabetes then it is certainly dangerous to grow up. If male sex and Jewish race predispose then it is dangerous to be a man and a Jew.

If adults have more diabetes than children it is because more years of wrong living have produced more pathology in them. If men have more diabetes than women, it is because their mode of living is worse. If Jews have more diabetes than others it would have to be something in their diet or mode of living that produces the diabetes.

Perhaps pancreatic disease is important, but it certainly is not self-originating and self-evolving. It must be the outgrowth of causes antecedent thereto; must be secondary to other causes and conditions. Healthy men and women, Jews or heathens, do not develop diabetes.

Heredity! Is there such a thing? It is true that there are many cases of diabetes in children and youth and it is quite possible that there is marked larval endocrine deficiency in all such children. It may even be a lesser degree of larval endocrine deficiency that establishes the tendency to diabetes in adults. The time of life at which carbohydrate tolerance breaks down may be considered an index to the larval endocrine imbalance in the individual. But we must not overlook the fact that of two individuals with the same degree of larval endocrine deficiency, the one that subjects his body to the most enervating influence and consumes the greatest amount of carbohydrates will break down his carbohydrate tolerance first.

In those cases developing after the thirty-fifth or fortieth year we think the larval deficiency may be considered negligible and think that the cause is a decidedly overcrowded general nutrition in which carbohydrate consumption has been excessive throughout life. The Islands of Langerhans have merely been overworked through the years.

Worry, anxiety, grief, shock-fright, accidents, surgical shock—will so impair the function of the pancreas that sugar shows up in the urine immediately. In many cases of diabetes, emotional stress is the chief cause, but it is never the sole cause. Every so-called disease is a complex effect of a number of correlated antecedents.

Diet and drink, sleep, work and play, and many other factors enter the cause of every so-called disease. *Any form of overstimulation—mental, emotional, sensory, physical, chemical, thermal, electrical—may give rise, first to functional, and, finally, to organic, disease:* Diabetes is a functional disturbance at its beginning.

Diabetes is more markedly on the increase in those countries in which sugar consumption has mounted to such high figures during the past fifty years—France, Germany, Britain and the United States. Every fat person is a potential diabetic. The overfeeding which is responsible for the fat overworks the pancreas and as overwork of any organ results in impairment of the function of the organ, pancreatic failure results. If its causes are not corrected, functional impairment gradually passes into organic disease.

Carbohydrate excess places a strong stress on the pancreas and when this gland is over-worked by too great an intake of starches and sugars, there will be first, irritation and inflammation, then enlargement, followed by degeneration (de-secretion); after which the body loses control of sugar metabolism and of the excess acidity caused by too much starch and sugar.

But it should not be thought that overeating of carbohydrates alone impairs the pancreas. Anything that produces *enervation*—tobacco, tea, coffee, chocolate, cocoa, alcohol, soda fountain sweets, loss of sleep, overwork, general overeating, emotionalism, etc.—impairs organic function in general including pancreatic function.

Sedentary habits added to overeating increase the tendency to diabetes, as they do to all other so-called *"degenerative diseases of later life."*

Let us glance briefly at the symptoms of diabetes. The urine is frequently voided, is pale and of high specific gravity unless there is inflammation of the kidneys in which case specific gravity is not so high. The urine contains varying amounts of sugar and certain acids that are absent from the urine of healthy subjects.

There is great thirst and a ravenous appetite with, commonly, loss of weight. Headache, depression and constipation are common. The breath is sweet, though unlike that of the healthy person. The mouth and skin are dry, even parched, the tongue is red and glazed, and when the disease is advanced the teeth usually decay and become loosened. There is a tendency to phyorrhea and bleeding of the gums. Loss of sex power is common, while Bright's disease may develop as a "complication." Impairment or loss of

vision may occur. Boils and eczema are also frequent. The disease progresses more rapidly in young patients than in older ones and it is thought by some *Hygienists* that children rarely if ever make a complete recovery.

Recovery—the medical term is "once a diabetic, always a diabetic"—depends upon the amount of functioning tissue left in the pancreas. Fortunately, the pancreas, like all other organs of the body, possesses a great excess of functioning power over that needed for the ordinary activities of life, so that even after part of the Islands of Langerhans have been destroyed the remainder will be able to function sufficiently to meet the regular needs of life, provided the impairing causes are removed and they are given opportunity to return to a state of health.

When organs are not destroyed beyond repair, rest, poise, self-control, and a restricted, proper diet will restore normal functioning. In diabetes, rest and proper food, with diet restricted to the patient's digestive capacity, and full cooperation will result in dependable health in a few years. Failure is for all those who are not willing to live according to nature's principles.

All enervating influences and habits must be corrected or removed. Sufficient rest for restoration of nerve energy is imperative. A fast, not merely to give the pancreas a rest, but of sufficient duration to free the body of its load of toxins, must be followed by a diet that is designed to produce all possible regeneration in the pancreatic gland. Feeding that is designed merely to cause the disappearance of sugar from the urine may speedily kill the patient. After health is restored the patient must be taught to live within his compensating capacity.

Article #2: Diabetes

In spite of the optimistic expectations with which Banting's discovery of insulin was heralded, this drug has proved to be nothing more than another palliative. It has contributed nothing towards the radical solution of the problem of diabetes. On the contrary, satisfaction with the palliation which insulin affords has tended to discourage further search for a genuine solution of the problems presented by this disease. Physicians and patients alike seem to be wholly satisfied to go on using insulin and ignoring all else.

Diabetes is on the increase in all the industrialized countries of the world and has steadily increased from the time of the discovery of insulin. The number of cases, world-wide, is estimated by medical authorities to run into many millions. *World Health News*, March, 1965, stated that "the incidence of diabetes is increasing all over the world and a WHO expert committee which has convened to discuss the problem considered that there is 'unassailable evidence that overweight predisposes people to diabetes ...' Some idea of the incidence of the condition can he gained from the figures for the United States, where there are estimated to be four million cases ..."

The dependence of the profession upon insulin is pathetic. It is no longer thought that insulin does any more than palliate symptoms. But there is the unfortunate fact that thousands of people have been given insulin who had nothing more than an evanescent appearance of sugar in the urine. Many of these have been kept on insulin until their pancreas underwent so much deterioration that they were unable to get off the drug. They did not have diabetes when they began the use of insulin, but they now have diabetes as a direct result of insulin dosage.

Insulin never restores health, hence its use is purely palliative. Before it came into use, physicians and patients made some effort to correct the mode of living. The diet of the diabetic was carefully regulated, even if not always well regulated, and physicians often sought for various causative factors in the life of

their patients. This is no longer so. Insulin enables them to live in spite of their indiscretions. This does not mean that insulin wipes out the effects of their indiscretions, but that it palliates one of the effects of these indiscretions. The result of the use of insulin has been a steady increase in the early death rate from diabetes from the year it was introduced. This is true because both physicians and patients rely upon the drug and ignore all causes of disease.

Calling diabetes a *disease of civilization*, while it stresses the fact that the less civilized, whose lives are more natural and whose diets are not processed and refined and not overabundant, have little or no diabetes, does not place its finger on the true cause of the deficiency of function. Until we are willing to recognize the genuine etiological factors and correct these, we are going to continue to watch the increase in the incidence of diabetes and depend on the processing of the pancreas of animals as a means of palliation. Today we do not even feel any shame for our illegitimate dependence on cattle and swine for such palliation.

The precarious condition in which the medical profession and their diabetic patients find themselves, growing out of their dependence on slaughter houses for insulin, has caused much concern. To date no means have been found to produce insulin, artificially, and the only available supply is from slaughtered animals. As the human population continues to increase and earth's animal population decreases, this could become serious from the standpoint of medicine. What would happen if the world became vegetarian, as it must in the future, and the slaughter of animals were discontinued? In his book. *The Genetic Code*, Prof. Isaac Asimov says: "Suppose though that increasing population pressure forces future generations more and more into a vegetable diet. This would mean a steady decrease in the potential supply of insulin." He implied that as far as he could see into the future, insulin production would continue to be dependent on animals.

This uncertainty about the future insulin supply underscores the urgent need for a discovery of the cause of diabetes and for finding a means for restoring health to the diabetic patient, instead of depending upon the palliation insulin provides. As no means of restoring health exists except those that constitute Natural Hygiene, the future diabetic will be forced to depend upon Hygiene rather than the animal product.